RAILWAY SURGEONS.

Railway surgeons are not essentially different, as human beings, from other sorts of surgeons; but no small portion of their work is different. They not only see a good deal of emergency surgery, which must be studied in the light of numerous exigencies that do not present themselves in the ordinary course of surgical work, but they occupy a dual position of responsibility that is sometimes misunderstood. They are responsible to the patient, of course; and equally, of course, they have a responsible relation to the railway companies they serve. It is therefore with particular pleasure that the JOURNAL announces the establishment of a department of railway surgery which will be devoted to the doings of the Pacific Association of Railway Surgeons, and to items of interest connected with that Association. And, be it said in passing, the Association, which was born some six years ago, has attained a sturdy growth and come into vigorous life. It numbers several hundred members and in its membership represents every railroad on the Pacific and every state in this territory. Already work has begun on the program for the next meeting (to be held in San Francisco in August, 1909), and it promises to be the best the Association has yet presented. Any railway surgeon on the Coast who does not belong to the Association, but would like to join, should apply to the secretary, Dr. G. R. Carson, Flood Building, San Francisco.

SANE VIEWS.

So much awful piffle has been written on the "sexual life" and the "sexual question" and the so-called "social evil" (as though there were but one only social evil!) that it is distinctly refreshing to find an author expressing views that are based on plain, ordinary common sense. We are so hedged about and trammeled with laws, written or unwritten, that are founded on the superstitions or the religions of our bygone ancestors—or even on their belly-aches and their bad dreams—that probably the vast majority of people look upon it as a crime to express any views contrary to these arbitrary, and often vicious, fixed standards. But now comes one who is not afraid to think in terms of common sense, who is not afraid to make his clear thinking into a book.*

While human passions last there will be, as there always has been, prostitution in some form. Books of preachments have been written about it, but "So-called moral sermons lead to nothing in this domain." So long as we are blind to actual facts that exist, we can make mighty little progress; few writers on the subject have ventured to state many actual facts that find expression by Forel. "A peculiarity of the sexual appetite in man, which is fatal for society, is his desire for change. This desire is not only one of the principal causes of polygamy, but also of prostitution and other analogous organizations." But it is useless to try and quote all the sane remarks of Forel; they would fill many issues of the JOURNAL.

* The Sexual Question: a scientific, physiological, hygienic and sociological study for the cultured classes. By August Forel. English adaptation by C. F. Marshall. New York: The Rebman Company.

SMALL PLACES DO GREAT THINGS.

It is not always the large community that sets the example in doing things. Elsewhere is the report of a meeting of the Placer County Society in which is given a resume of the work of stamping out malaria in Auburn. It is a sermon in a very few words and one which we should take to heart. For malaria, typhoid, smallpox or diphtheria to exist in a community in these days is a disgrace to human intelligence. They do exist because the people do not understand what they mean, nor how easy it is to get rid of them. Let the people once know exactly the truth about these preventable diseases and they will demand legislative aid in stamping them out; let the people know what we are striving for through our local and state health boards and through our medical law, and they will demand the fullest support from the legislature. There have been enough public meetings held during the past six months to show pretty conclusively what the temper of the people is when these things are explained to them. It's a case of dollars or lives, hogs or children, and the people are only just beginning to realize that fact. The greatest asset of any nation is the health of its citizens; without that factor, all the potential wealth of a country is as nothing. We have gone blindly on ignoring that fact for a very long time, and now we are coming to a change. Natural resources are receiving attention at every hand, and the greatest of them all—public health—is receiving its share with daily growing interest. And it is time that it should be so. Let the merchant see just where and how much he is injured by the presence of these preventable diseases, and he will soon perceive the economy of doing away with them. The problem is by no means so difficult as it would appear; its solution is in the awakening of the people.

THE SKIN REACTION AFTER THE USE OF TUBERCULIN OINTMENT.*

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This article is based on personal observations made in 100 patients on whom I have made 123 inunctions with tuberculin ointment and 45 control inunctions with various bacterial preparations which will be indicated later. Sixty-two positive reactions were observed and studied. The great majority of these cases were definitely tubercular, as proven by the various well established means of diagnosis and were chosen mainly through a desire to see a large number of examples of the eruption and to observe its nature and note, if possible, any variations.

Dermatologically the subject is of very great interest and the work has suggested many questions for investigation. All observers have noted the

* Read before the San Francisco County Medical Society

strong resemblance that the reaction bears to *lichen scrofulosorum* (a disease which has been reported only a very few times in this country). So many new problems have presented themselves and so much more work is necessary (particularly in the line of animal experimentation) that this paper is offered as a preliminary report. It necessarily involves also a review of the literature on the subject. The absolute diagnostic value of the measure will not be discussed, but in my series of 100 cases with 62 reactions, certain facts were noted which I deem worth while reporting. It would not be wise at this time to draw any definite conclusions. It is only from many series of cases and experiments as suggested here, that one would be justified in forming conclusions. Therefore the following facts are submitted, to add to other evidence which has already been presented in the medical literature and which, during the next few months, will be very largely augmented by work of many others.

A review of recent literature on the subject must necessarily be presented here. Moro and Boganoff (*Wiener klinische Wochenschrift,* Aug. 1, 1907) report some experiments which were initiated by E. Moro of Munich in July, 1907. He originated a salve (which now bears his name) composed of equal parts of Koch's old tuberculin and anhydrous lanolin and he found that in tuberculosis cases a papular eruption appeared in areas rubbed with this salve. In *La Presse Medicale,* July 29, 1908, he briefly reviews the development of his idea and refers to the phenomenon as the "percutaneous reaction" in contradistinction to Pirquet's "cuti-reaction," the former consisting of applying the tuberculin to the intact skin by means of an ointment, and the latter, the introducing of the tuberculin into an incised wound produced in the skin. In this article, Moro refers to M. J. Lignieres, who presented some results of animal experimentation before L'Academie des Sciences de Paris (Oct. 28, 1907). He first shaved the skin of the animal and then rubbed dead tubercle bacilli or tuberculin into the surface. In positive cases, an edematous, red, and painful swelling appeared in this area twenty-four hours later. Reference is also made to work of H. Naegli, Ackerblom and Vernier (reported in *Therapeut. Monatschefte,* January 1, 1908), in which they call attention to similar experiments and corresponding results in man. Moro makes the comment that these cases do not properly represent the percutaneous reaction, because in shaving, minute abrasions are produced, in which instances the process is not the same.

Naturally the specific nature of this test has been much considered and much evidence has been presented on both sides of the question. E. Moro (in *Munchener Medizinische Wochenschrift,* Feb. 4, 1908, No. 5, pp. 209-264), reports that the test proved specific in 89 cases and that positive reactions were paralleled in each case by the other tests also. Wolf-Eisner (*Beitrage zur Klinik der Tuberculose,* Wurzburg, No. X No. 2, p. 129-224) makes the statement that in 70% of all tuberculosis cases tested, the cutaneous and subcutaneous methods gave positive findings. Dr. Gerald Webb at the last meeting of the Colorado State Medical Society (*Journal A. M. A.,* Vol. 4, No. 15, p. 1271) made a report of 155 "Moro inunction reactions" in which he stated that in 85 apparently normal individuals 66 gave no reaction, but 19 gave a positive response. Of these 19 positive tests, 14 were later found by other means to have tuberculosis and of the 66 negative cases two were later found to be tubercular. In 15 well marked cases, 7 were negative and 8 positive. It is not stated whether any of these that failed to react were advanced cases. In 39 suspects, 8 gave a negative result and 31 were positive. In 12 that were diagnosed clinically as "early cases," there occurred 11 positive reactions and one was negative to the test. Moro in all his work has maintained that the reaction is specific, in the face of some seemingly unfavorable evidence. In a very recent paper (*Munchener medizin. Wochenschrift,* 1908, No. 39, p. 2025) he describes some unusual forms of the reaction and certain occurrences which seem to indicate its non-specificity; but in view of his many other experiences, he is not yet ready to abandon his position. In several children and in one adult tubercular, he noted what he called a "nervous reflex reaction" at a point away from the area which had received the tuberculin inunction and which had itself given a positive response. In several instances this reflex eruption appeared at a symmetrical point on the opposite side of the body, resembling in many ways the primary reaction. In other cases the arrangement was not symmetrical, but the reflex occurred at another point. Sometimes the reflex appeared simultaneously with the regular reaction and sometimes it came later. It was observed to recur several times in the same subject. One child developed a characteristic papular eruption on the skin of the abdomen where the salve had been rubbed just below the xiphoid appendix. This eruption gradually spread so as to extend half way around the thorax, terminating at the spinal column, after the manner of zoster. A child with *lichen scrofulosorum* was given an inunction and the reaction which followed, was very intense. Two days later the lichen had completely disappeared. He reported also some *modified* reactions which he had obtained by using ointments made of anhydrous lanolin and acetic acid, and also with formic acid and again with triturated caterpillars. All of these substances contain elements which always have an irritating effect on the skin.

In commenting upon these exceptional occurrences, Moro states that the nervous reflex process is a vaso motor phenomenon, "an angioneurotic inflammation, a slow reflex." He states that it is his conviction that this nervous reaction is specific. He asserts that in tubercular individuals there exists "a special sensibility of the nervous system, as indicated by profuse perspiration, paresies and paralyses, troubles of sensation, troubles of menstruation, functional dyspepsias, neurites et cetera." Moro and the other observers have never seen gen-

eral symptoms or a febrile reaction following this test.

An interesting communication from E. Senger (in *Berliner klinische Wochenschrift,* June 8, 1908, Vol. XLV, No. 23, pp. 1081-1120) seems to have some bearing on the question of the specificity of the test. He has been using a 3% tuberculin-lanolin salve in lupus vulgaris. He states that by rubbing this salve directly over the lupus lesions, a very intense local inflammatory reaction occurs, which he likens to an explosion. This inflammatory outburst is limited strictly to the lupus lesions, which fact has been taken advantage of by Senger in differentiating tubercular from other lesions of the skin. The inflammation finally results in suppuration. At this stage, he applies the Roentgen Ray for the final cure. Naturally he regards this prenomenon as specific. It would be most interesting to observe the effect of tuberculin lanolin applied locally to other tuberculous skin conditions.

My personal experiences have extended over a period of three months, during which time I have been given the privilege of utilizing for this purpose cases in the services of Drs. Long and King at the U. S. Marine Hospital, patients in the private practice of Dr. Rothschild, cases in the service of Dr. H. P. Hill at St. Luke's Hospital; also patients at the University of California Hospital, the San Francisco Fruit and Flower Mission clinics, and in Dr. Langley Porter's service at Lane Hospital. The great majority of these patients were adults.

In the preparation of the tuberculin-lanolin ointment, reliable anhydrous lanolin must be used, and it is necessary that it be thoroughly rubbed up for at least one-half hour. The jar containing the same should have a tightly fitting cover and must be kept cool. Under these conditions it will retain its efficiency for several weeks. I have recently been able to obtain strong reactions with a salve over six weeks old. It is not necessary to have the skin surgically clean,—simple cleansing is best. Scrubbing with soap and water and then alcohol, is very apt to produce considerable hyperemia or even abrasions, and this is to be avoided. A non-hairy region is chosen, as for instance, the skin over the deltoid, biceps, or pectoralis major. A portion of the ointment about the size of a small pea (containing approximately 0.10 tuberculin) is rubbed into an area of two or three square inches for one-half to one minute. A smooth glass rod or the rounded end of a test tube is very suitable for this purpose. I found finger cots to be unsatisfactory, as by their use, there was more danger of producing abrasions. In the event of a strong reaction, within forty-eight hours, and rarely before twenty-four hours have elapsed, there occurs a papular eruption in the area rubbed. This reaction, as I have seen it, consists of papules varying greatly in number and degree of redness; but these individual elements are of a constant type anatomically. The papule is usually small (about 2 mm. in diameter) and a lanugo hair can generally be seen piercing its apex. It is therefore follicular. It varies in color from a very pale pink to a bright violaceous red. In vigorous reactions, the primary papules may be two or three times this size, distinctly edematous, on an inflammatory base, and capped with a small pale yellow crust. Usually there are only a few of these papules, but in vigorous reactions, there may be a hundred or more on a distinctly erythematous base and the whole patch may be somewhat raised by the local edema. Pustules are not seen until late, when they are due to secondary infection from rubbing or scratching.

In the majority of my cases the eruption did not appear until twenty-four to forty-eight hours after the inunction. The most favorable time to observe the same was after forty-eight hours. A reaction is considered positive when it occurs within forty-eight hours and it very rarely appears later than this. In negative cases there is absolutely no change in the skin. Usually the papules undergo a gradual involution, becoming brownish, then yellow and finally leaving a faint yellowish stain which disappears in the course of a week or two. The lesions remain discrete throughout. In one case (a very lively reaction) I noted marked desquamation strictly limited to the area of eruption. Twenty-four days later (when the patient left the hospital), there still remained discrete yellow pigmented spots and the overlying epidermis was still in an active state of desquamation. I have often noticed in the final stages of the reaction a slight desquamation, but in none was it so profuse as in this case. I have never personally observed a general skin reaction, and never have I noted a recurrence of the eruption after a subsequent tuberculin injection made after the final disappearance of the skin lesions. Dr. Porter's case, which will be referred to later, developed a general eruption some days after I last observed the child. Only a very small number of the patients had any subjective symptoms and these only spoke of a pruritus which was barely noticeable.

In this percutaneous reaction, one factor which has a very prominent part in the Pirquet cutireaction, is not present,—i. e. mechanical injury to the skin. The ointment is rubbed over the intact epidermis and the tuberculin enters through the natural openings in the skin, where, after a number of hours, a certain pathological process develops. In the Pirquet, an incision is made into the corium, and it is well known that a simple incision will result in certain microscopic changes. Recent studies by Jules Lemaire and M. Ferrand (*La Presse Medicale,* Sept. 28, 1907) show very well the manner in which the trauma affects the reaction. They observe that the extent of dermal destruction and the importance of the afflux of leukocytes in the neighborhood appear to be determined by the depth of the incision. They noted dilatation of the lymph spaces, marked infiltration of the region with many polynuclear leukocytes and other elements of the blood collected mostly along the line of incision and around the blood vessels and glandular elements of the skin. There were also large numbers of lymphocytes in these areas. The authors make the comment, however, that "the infiltration is all out

of proportion to the small epidermal wound." They finally conclude that the process is a specific one, in as much as they were "unable to produce the same *with all its characters,*" by using other agents, (such as glycerin, carbolized and pure, or terebinthinum). This suggests several most interesting lines of inquiry.

From one of my lively reactions I removed (under local ethyl chloride anesthesia) a small piece of skin, including the edge of a papule and a small part of the adjacent tissue. The papule was about fifty hours old. The specimen was fixed and hardened in alcohol and mounted in paraffine. Sections were stained with Unna's polychrome methylene blue, hematoxylon and eosin, picric acid, acid orcein, and carbol fuchsin and methylene blue. Examination of the same revealed a process similar in many respects, to the Pirquet; but with the difference that the traumatic factor was absent. The Pirquet shows a mixed picture of mechanical traumatism and reaction to the toxin. The percutaneous reaction papule represents, if anything, a truer picture of the process.

Briefly the following was observed: General edema in which both corium and epidermis participate. Marked dilatation of interepithelial lymph spaces in epidermis with frequent vacuolation of the nuclei here. Occasional wandering lymphocytes in these dilated channels, particularly just over the largest infiltrating masses. Corium shows marked dilatation of subpapillary vessels and their extensions into the papillæ, with a narrow zone of infiltrating cells surrounding them. The corium outside the limits of the papule shows this condition. The most marked infiltration is seen around the sebaceous gland and hair follicle. The coil glands were not affected, strange to say. The cellular infiltration consists principally of mononuclear cells resembling lymphocytes. Very few polynuclears are to be noted. There is quite a noticeable *increase* in mast cells, particularly in the subpapillary region and along the vessels. There is considerable proliferation of the connective tissue nuclei everywhere, but especially in the vicinity of the blood vessels and the follicle. Elastic tissue unchanged. Collagen edematous and shows somewhat diminished affinity for the acid dye. No tubercle bacilli were found.

It is hoped to have in the near future sections of different papules representing all stages in their evolution.

The great majority of the patients tested by me were definitely tubercular, as shown either by the presence of tubercle bacilli, unmistakable physical signs, or febrile reaction following tuberculin injection. I desired to observe as large a number of these papular eruptions as possible and in this, was not disappointed, for fifty-three positive reactions appeared in fifty-three proven tuberculosis cases. In eight suspects, there was a definite reaction (two of whom were sickly infants and living with mother and grandmother who were both positively tubercular,—and five of whom gave every evidence, excepting bacteriological, of having the disease). One case gave an alcoholic history and had tuberculosis in his family. One convalescent typhoid gave a typical though feeble reaction. On careful physical examination by Dr. Long at the Marine Hospital, no signs of tuberculosis were found and he had no symptoms. He was discharged from the hospital in a few days and so it was not determined whether or not he would respond to the tuberculin injection. It is hoped that he will soon appear at headquarters, when this will be done. Thirty-eight did not react. Eleven of these were well proven advanced tuberculars and one died of the disease in a few days. Of course it is well known that advanced cases fail to respond to other tests. Eleven of the remaining twenty-seven were suspects; but were negative to the usual well established tests. The sixteen remaining negative cases, were positively not tubercular (2 bubo, 1 chancroid, 6 typhoid, 1 intestinal indigestion, 2 syphilis, 1 carcinoma, 1 hernia, 1 gonorrhea, 1 estivo-autumnal fever, and one absolutely well individual.)

For control, I used ointments made with anhydrous lanolin, pneumococcus, streptococcus gonococcus and tubercle bacillus vaccines, diphtheria toxin and finally pure anhydrous lanolin. The bacterial emulsions were kindly sent me by Mulford & Co. and the diphtheria toxin, by Cutter's Laboratory. In each one of forty-five cases, one of these various controls was used and in no instance was there afterwards observed the slightest change in the skin, with the exception of one case, which showed a small, but very mature pustule in the area rubbed with the diphtheria toxin. I have not seen pustules in the tuberculin percutaneous reaction excepting when due to secondary infection. In each case where the control was used, it was rubbed into an area corresponding in position with that which received the tuberculin-lanolin. This is interesting in view of the fact that Moro has recently observed so-called "nervous reactions" on corresponding regions. In one of my cases, something suggesting this was noted. This was in an infant with tubercular dactylitis in the service of Dr. Langley Porter at Lane Hospital. The tuberculin ointment was applied to the flexor surface of the right forearm. A characteristic reaction appeared in this area and extended around over the dorsal surface of the forearm and hand. On my second inspection, I observed the eruption on the left forearm and hand in corresponding areas. Dr. Porter saw the child from day to day and he informs me that a general eruption occurred all over the body. He will tell of the further progress of the case. If the nervous reflex were a common occurrence it most certainly would have appeared in more of my cases, and particularly would have been observed where both sides of the body were rubbed, one, with tuberculin salve and the other with the control, because these cases were frequently examined on both sides of the body.

One man (in the Marine Hospital) with secondary luetic eruption and at the same time, tubercle bacilli in his sputum, was given an inunction on one arm with tuberculin lanolin and on a corresponding area on the opposite arm, with streptococcus lanolin. Within forty-eight hours a definite reac-

tion appeared on the area rubbed with tuberculin-lanolin. The control gave no reaction, nor did it appear subsequently. The patient was at the time receiving mercurial inunctions. The tuberculin reaction subsided in three days,—an unusual occurrence. It would be most interesting to observe other cases similar to this and even in uncomplicated tuberculars, it might be worth while inquiring into any possible influence that mercury might have on the reaction.

In conclusion I shall briefly recapitulate my results as follows:

Sixty-two positive reactions:—

53 proven tuberculosis cases.

7 suspects, with evidence strongly in favor of tuberculosis.

1 convalescent typhoid.

1 non-tubercular, but alcoholic and giving tubercular family history.

Thirty-eight did not react:

16 positively not tubercular.

11 were negative to the other tests.

11 were definitely advanced cases of tuberculosis.

In closing I wish to thank Drs. Rothschild, Long, King, Russ, Porter, E. Keys, E. F. Glaser, and H. P. Hill, for many courtesies and all this material which they have placed at my disposal. I am indebted to Dr. Dudley Tait for kind suggestions and literature on the subject.

Discussion.

Dr. King: With regard to the case of zoster, I cannot say that it has any bearing on the reaction of the inunctions. On Sept. 28th the salve was put on the arm. Three days ago the man called my attention to a very marked zoster on the right side. One area was over the sacrum, one over the gluteal muscle and the rest on the outer and anterior surface of the thigh. There were probably six or eight distinct patches about the size of a silver dollar. It was a typical zoster eruption, not in any way like the eruption seen with the Moro salve. Another case gave distinct signs of consolidation of both apices. The Moro test was applied but gave no reaction in four days, the Calmette application was tried and gave no reaction after the fourth day. I was going to give this man the diagnostic tuberculin injection but he left the hospital, with a promise to return.

Dr. Ebright: Both Dr. Rothschild and Dr. Alderson are to be congratulated upon their papers as they touched in an admirable way a subject which has received a great deal of consideration in the hands of the big men in the last year and the subject is far from being closed. The question is, of course, as to the specific nature of the reaction and of that there seems to be little doubt. But is the patient suffering from active tuberculosis? It seems to have been shown that cases having had tuberculosis may show just as active a reaction as a patient who has active tuberculosis and for that reason the value of the reaction is not so great as it otherwise would be. In adults, those who have recovered from previous tuberculosis constitute considerable numbers, and if we find in a suspected case a positive reaction we are far from sure of the diagnosis. That has been admitted by Von Pirquet and Moro and most of the other observers. I remember a case in the City and County Hospital of a man with a joint which appeared to be tuberculous. He was given a subcutaneous injection of tuberculin and had a pronounced reaction. We sent the man to the surgical clinic to have the thing attended to surgically. Dr. Terry concluded to try mercury on this man, however, and the trouble cleared up immediately. The use of subcutaneous tuberculin I am afraid of as I have seen three cases where reaction did not subside and the patients died within a few months, patients in whom the symptoms had not been previously very marked. It seems to me that the subcutaneous use of tuberculin as a diagnostic means ought to be very closely restricted as also the eye reaction. I do not see my way clear to use the latter in view of the fact that many eyes have shown bad results, particularly in children. The choice of the Moro and Von Pirquet reaction is an interesting one. In the first place, the solutions need to be kept fresh, the Pirquet does not keep very long and the making up of the salve for the Moro reaction is rather delicate. I am predisposed in favor of the Pirquet reaction and interpreting the results of it, it seems to me that in cases where the diagnosis can be made by finding the bacilli, there is no use of going further, and in cases of positive reaction it is not so certain as to be of decisive value. The negative reaction is more important than the positive reaction in adults. In children under a year or a year and a half old, in whom there is little possibility that previous tuberculosis could have been present, a positive reaction is conclusive in about 98% of the cases.

Dr. Porter: The case that Dr. Alderson cited is one that presented to me an interesting phase that apparently did not appeal to Dr. Alderson. The child had the Moro salve applied but two weeks previously had been tested for tuberculosis by the Von Pirquet reaction. The Pirquet gave a positive though not a very severe reaction. Dr. Alderson's test with the Moro salve gave a positive reaction within forty-eight hours. At that time it gave the localized reaction and during the next two weeks there was general reaction. It looked almost as though the child had measles, the head was covered with an eczema and one could hardly tell what had happened to the face and neck. We are dealing here with sensitization. If a child has had the Pirquet reaction and you apply the Moro test you are dealing with a sensitized child. If you give two Moro tests within the critical period you are dealing with a sensitized child. If you give the Moro test after the subcutaneous test you may do a great deal of harm. Children or adults with active tuberculosis are very frequently inoculating themselves and you may with one of these reactions do damage to the organism because of a sensitization from this autogenous product. The damage that has been done by horse serum is well known and I have no doubt that the reaction in this case of Dr. Alderson was an analogous reaction. Fortunately the child was not seriously injured. This child had a tubercular dactylitis and the process lighted up and became more active for twenty-four hours or more after the reaction appeared on the skin. The question of practicability of these reactions has been dealt with very clearly by all writers. There is only one point which I would like to suggest, and that is the use of this reaction in young infants. A great many infants waste and the best attempts to keep them gaining weight and to straighten them out are vain and one wonders if he is not dealing with tuberculosis in the infant; we find this condition more common than we give it credit for. In looking up the statistics, the European statistics, I find 8% of the post mortems on infants show tuberculosis. In such cases I have no doubt that the tuberculin tests may be used with good effect and some of these infants saved through appropriate treatment.

Dr. Schmoll: The search for pathognomonic symptoms explains the enthusiasm with which these reactions have been received. We thought that by means of the anaphylactic reaction we had a sure means by diagnosing an existing tuberculosis. A

year ago the Calmette reaction was received with great enthusiasm. Since the dangers of the procedure have been shown it has been abandoned almost completely. It is clear that the Moro reaction is based upon the same principle, the hypersensibility of the tissues of the organism affected by tuberculosis to the tubercular toxin. From a general standpoint the reaction is based upon the same principles as the Pirquet reaction and the ophthalmo reaction. Now it has been shown by statistics which have been gathered in Liettheim's Clinic from a series of 600 cases and that such a reaction exists in about 33 per cent of the cases which were clearly not tubercular. It has been found in post-mortems that in a certain number of cases with a positive ophthalmo reaction there was no trace of tuberculosis. This proves that such a reaction may exist without any tubercular infection. On the other hand an old healed tubercular process may produce a reaction, while the existing process may be of a non-tubercular nature. On the other hand, the reaction may be absent in a clear case of tuberculosis. I think that it was in the same series of 600 cases that the anaphylactic reaction was absent in about 40 per cent of the cases in which the tubercle bacilli were found, where the disease therefore was clearly tuberculosis. It seems to me that the Moro reaction is bound to have the same fallacies and statistics lately published show that the Moro reaction gives about the same percentage of failures in clinical cases of tuberculosis as the ophthalmo reaction. As clinicians we should feel that such a reaction based upon the hypersensitiveness of the cells can only form one ring in the chain of evidence and our clinical diagnosis should be by no means based on a reaction which we do not understand and which has proven a fallacy in a great number of cases.

Dr. Tait: I am much surprised to hear some of the members refer to the specific character of these reactions, especially that of the Moro test. I can hardly accept that opinion in view of the experimental work done by Arloing in France, and Moro himself. Arloing demonstrated, about a year ago, that the occular reaction which was merely a phenomenon of vaso-dilatation, occurring in what we called a condition of intoxinization in a body sensitized by one of the various toxins. He found, contrary to what has been reported, that the eye reaction occurred with the typhoid, the diphtheria and the streptococcus toxins, and also in animals sensitized with tetanus toxin. Moro recently has come to the same conclusion as to the phenomenon of vaso-dilatation, and I cannot understand how one of the writers to-night refers to the specific character of this test in view of Moro's positive findings with formic acid, acetic acid and extract of caterpillars. Certainly in these experiments the theory of anti-bodies may positively be eliminated.

Dr. Chipman: I can only add a word in regard to what we might consider the value of the tuberculin reactions in a dermatologic sense. Here they can be of service in a number of cases, not so much perhaps in the frankly tubercular cases such as tuberculosis vernucosa cutis and lupus vulgaris, as in the group of so-called para-tuberculoses such as lupus erythematosus, acnitis, folliclis, lichen scrofulosorum and several others. There are perhaps six or eight dermatologic affections which are supposed to be tubercular—cases in which the tubercle bacillus has not been found but which are supposed to be due to the elimination of some tubercular toxin. If, by means of the Moro reaction or any other tuberculin test we can arrive at a positive diagnosis it will be of great assistance. One affection—erythema induratum—clinically bears a striking resemblance to syphilitic gumma. It occurs on the legs, principally in young women who are on their feet much of the time and particularly in strumous subjects and those of tubercular family history. Of course in a negative way anti-syphilitic treatment would serve if the case were luetic; but if not, the tuberculin test would be positive.

Dr. Alderson, closing: There is not much more to be said. One of the gentlemen in discussing my paper, spoke of having read of a number of cases coming to post mortem, and I understood him to say that during life they had failed to respond to the tuberculin test, but were later found to have definite tubercular lesions. In advanced cases these tests often fail and these cases (if I understood the gentleman correctly), must have been advanced to have gone to autopsy. Regarding the conditions following the reaction in cases of bone and visceral tuberculosis, I cannot say very much. The gentlemen from the Marine Hospital will be able to tell more than I because they have been interested in the other side of the question, i. e., the course of the disease. I have been studying the question mainly from a dermatologist's point of view. Quite a number of the cases that gave the reaction at the Marine Hospital were cases of bone tuberculosis. There were two marked cases of tuberculosis of the testicle. In none of my one hundred and twenty-three inunctions did I note any after effects. Only sixty-two gave the reaction and only one out of these sixty-two developed a general eruption (the case in Dr. Porter's service at Lane Hospital.) Regarding the statement as to the specificity of the test, I did say something about it, but merely quoted others who have had extensive experience, and there were no personal conclusions presented. Moro in his latest paper states that he feels that in spite of the evidence to the contrary he is not ready to abandon his position and that the reaction is specific. Those reactions occurring after the use of formic acid, acetic acid, and the caterpillar preparation (all of which contain elements very irritating to the skin), were designated by Moro as "attenuated reactions." An "attenuated reaction" has not the same significance that a positive one would have. As I stated in my paper several times, a great deal more work will have to be done, and so regarding the question of specificity, my humble opinion at this time would not be worth much. Of course this is the main point being worked out now.

Dr. Rothschild, closing: I have to agree with Dr. Ebright that the reaction does not only take place in active tuberculosis but also in all cases which have been entirely free from clinical symptoms for some time. But if in such a case which has no clinical symptoms the reaction is positive, it is of so much more value if we have a case of latent tuberculosis. I have never seen any cases of tuberculosis die after one injection of tuberculin if the tuberculin had been used with discretion. That is one point which I have always considered most important in the use of tuberculin, namely, that the amount used should be very small. I also called attention to the fact that I began with a very small amount, gradually going up to avoid just such effects. I cannot believe it possible that any case of tuberculosis would die after an injection of one third mg. subcutaneously or one tenth intravenously as I recommended them for diagnostic purposes to-night, and I have never read of it. Of course it is not wise to consider only one symptom of any disease and base the early diagnosis on that one symptom. I also called attention in my paper to the importance of combining the other symptoms with the one method under discussion. In tuberculosis of infants the Moro method is of great diagnostic value. I have a child under treatment at present with a light cough, loss of weight, slight fever in the afternoon and otherwise there are no symptoms. The Moro test gave positive reaction. The child is now under

treatment and there is no question about it to-day that the child had a beginning tuberculosis. The Moro test was in this case of great importance. I disagree decidedly with the remarks of Dr. Tait that Moro himself is not positive of the correctness of his method. Dr. Moro's last publication in one of the September numbers of the Munich Medical Weekly gave 722 cases in which he got a positive reaction and many of these were undoubtedly cases in the beginning stage and there he expresses himself most positively and enthusiastically in regard to his method. I have also stated that cases of advanced tuberculosis did often not give a positive reaction but in such cases it is not necessary to get a reaction because they can be easily diagnosed without the Moro method or any tuberculin method. If besides the tuberculin ointment other chemicals give similar reaction if rubbed into the skin, there is no reason whatsoever why the tuberculin test should lose any value. We are only talking about the reaction of the tuberculin ointment and if this ointment gives a positive test in cases of tuberculosis and does not give a reaction in cases that did not have any tuberculosis, there is undoubtedly great importance attached to this method.

THE ROSE BRADFORD KIDNEY.*

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The greatest problems are those nearest home, and the least understood diseases are those of every-day occurrence. For the commonest exanthemata we have no specifics. Gout and its allied ailments is a center for divided opinions, and the kidney, the subject of my paper, while from the nature of its position and functions of easy access to observation and experimentation, is nevertheless, a battle-ground for clinician and nosologist, and a therapeutic wilderness almost uncharted. The more or less clear pathological and clinical pictures that have given grounds for a definite nosology in the case of the stomach, liver and heart are here lost in symptom complexes that seemingly bear little relation to the underlying pathology; and so we have a conflicting nomenclature with the accompaniment of hazy notions as to nature, prognosis and treatment.

Leaving aside the degenerative diseases of the kidney we have in every-day practice to deal with the hyperplastic conditions associated with the name of Bright, and it is to one member of this series that I would direct your attention. The group as a whole may be classified by virtue of their assumed pathological bases into:

1. Acute hyperamnia sine exudate.
2. Acute tubular nephritis or catarrhal inflammation of the tubules.
3. Acute productive nephritis.
4. Chronic productive nephritis.
5. Fibrosis of the kidney.

The first is purely a vascular disturbance.

The second is like the first plus tubular desquamation.

The third is further characterized by an added interstitial hyperplasia.

The fourth is a chronic subacute continuation of the third, plus degenerative changes.

The fifth is a simple fibrosis usually due to toxic stimulation of the interstitial fiberoblasts, or it may be a replacement fibrosis.

The first three acute conditions are neither pathologically nor symptomatically differentiated with any sharpness among themselves, but form an easily recognizable group. The fourth, chronic productive nephritis, with albuminuria, anemia, and edema is also a well defined condition, not easily overlooked. Finally, the fibrotic conditions usually spoken of as chronic interstitial nephritis, or granular contracted kidney, exist in the minds of most practitioners as the well known symptom complex, so often seen in men advanced in life, where the combination of arterio sclerosis with left sided cardiac hypertrophy, polyuria, and the train of terminal symptoms, forms a picture we daily see and rarely mistake.

That fibrotic kidneys occasionally occur in the young has long been known, and at one time their occurrence as a final stage in the evolution of the large white kidney, of chronic productive nephritis was very positively asserted; but that the young should suffer from a special form of fibrotic kidney, inflammatory in origin, having a pathology distinct from the granular contracted kidney of later life, and presenting a quite distinct clinical evolution is a new conception, due chiefly to the labors of Dr. Rose Bradford, whose name is now commonly associated with the condition I am about to describe. Those who would go fully into the matter should read the last of the Croonian lectures delivered before the Royal College of Physicians of London on the 16th of June, 1904, and reported in the Lancet of August the 6th of that year. It will suffice here to point out in connection with the pathological differences that Dr. Bradford lays stress on the much more regular distribution of the interstitial overgrowth in the new type and states that the arterial changes met with in the red contracted kidney are not often met within this. Dr. Bradford thus described the morbid anatomy.

"In the second form of chronic Bright's disease, to which it is somewhat difficult to apply a name, but which may be called for purposes of somplicity the contracted white kidney, the organ is very much smaller than the normal, rivaling the granular kidney in size and sometimes weighing as little as from one and a half to two ounces. The color both of the surface, and the organ on section may vary, but it is usually of an opaque whitish yellow, but very commonly showing here and there areas of congestion, so as to produce, especially on the surface of the organ, a mottled appearance. The capsule is usually markedly thickened and sometimes very considerably so. On stripping, it leaves a coarsely granular surface, the granulations being of large size and extremely well marked. The stripping of the capsules does not commonly lead to much tearing of the renal substance, and often to none at all. The cortex is greatly diminished in amount and may even be reduced to 1-16 inch on section. The reduction of the amount of the cortex is

* Read before the San Francisco County Medical Society.